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Working Group B, Thirty-Seventh Session
Vienna, 22 August – 9 September 2011

REPORT OF WORKING GROUP B TO THE THIRTY-SEVENTH SESSION OF THE PREPARATORY COMMISSION

INTRODUCTION

1. Pursuant to the decision of the Thirty-Fifth Session of the Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization (CTBT/PC-35/2/Annex II), Working Group B (WGB) held its Thirty-Seventh Session in Vienna from 22 August to 9 September 2011.

2. The session, which included five plenary meetings, was chaired by Mr Hein Haak of the Netherlands, with assistance from his Friends of the Chair, Mr Svein Mykkeltveit of Norway and Mr David McCormack of Canada. Mr Arne Bell, of the Provisional Technical Secretariat (PTS), served as Secretary of WGB. Mr Haak was further assisted by Task Leaders (see Annex I to this report), who led the discussions on technical tasks assigned to WGB by the Commission. In addition, a joint meeting was held with Working Group A (WGA) on 5 September 2011. During the session, the Chairperson of WGB informed States Signatories that he had decided to appoint three new Task Leaders: Luiz Conti (Brazil), Öcal Necmioğlu (Turkey) and Gérard Rambolamanana (Madagascar).

3. Representatives and scientific experts of the following States Signatories participated in the session: Albania, Algeria, Andorra, Angola, Argentina, Australia, Austria, Belarus, Belgium, Bolivia (Plurinational State of), Brazil, Bulgaria, Burkina Faso, Canada, Chile, China, Colombia, Costa Rica, Côte d'Ivoire, Croatia, Cyprus, the Czech Republic, the Democratic Republic of the Congo, Denmark, the Dominican Republic, Ecuador, Egypt, Estonia, Finland, France, Germany, Greece, Guatemala, the Holy See, Hungary, Iceland, Indonesia, Iran (Islamic Republic of), Iraq, Ireland, Israel, Italy, Japan, Kazakhstan, Kenya, Kuwait, Latvia, Lebanon, Luxembourg, Madagascar, Malaysia, Mexico, Mongolia, Morocco, Namibia, the Netherlands, New Zealand, Nicaragua, Nigeria, Norway, Panama, Papua New Guinea, Peru, Poland, Portugal, the Republic of Korea, Romania, the Russian Federation, San Marino, Serbia, Slovakia, Slovenia, South Africa, Spain, Sri Lanka, the Sudan, Sweden, Switzerland, Thailand, The former Yugoslav Republic of Macedonia, Tunisia, Turkey, Uganda, Ukraine, the

United Arab Emirates, the United Kingdom of Great Britain and Northern Ireland, the United States of America, Venezuela (Bolivarian Republic of), Viet Nam and Zimbabwe. Palestine and the Sovereign Military Order of Malta attended as observers.

4. The Executive Secretary, Mr Tibor Tóth, made a statement to WGB (CTBT/WGB-37/CRP.1). The Directors of the International Monitoring System (IMS), International Data Centre (IDC) and On-Site Inspection (OSI) Divisions, and other PTS staff presented reports to WGB on the activities of the PTS. Copies of these presentations were distributed in hard copy and on a CD-ROM. WGB expressed its appreciation for the statement of the Executive Secretary, the documents and the presentations as well as for the informal briefings prior to the session.

SCOPE

5. The goals of this session of WGB were to:

- Review and assess the progress reports by the PTS on implementation of the 2011 verification related programme;
- Review the verification related work programme for 2011 and recommend revisions and amendments, if needed, to the Commission;
- Consider the draft verification related programme and budget proposed by the PTS for 2012 and propose additional guidance as appropriate;
- Conduct work on a number of technical issues as contained in the 2011 work programme for WGB.

WGB also discussed, in a joint meeting with WGA, the 2012 Programme and Budget proposals. Finally, WGB considered its method of work as well as a work programme and a schedule of sessions for 2012.

RESULTS AND RECOMMENDATIONS

Review and Assessment of Progress by the PTS in Implementing the 2011 Programme

6. WGB reviewed and assessed the reports by the PTS on its progress in implementing the 2011 programme, including the report of the Executive Secretary (CTBT/ES/2011/2 and Corr.1). WGB considered that work has proceeded generally as planned so far. WGB expressed its appreciation to States Signatories that have hosted and/or provided support for PTS activities during 2011 so far. Additional comments and assessment of progress in 2011 are found below.

Review of the 2011 Work Programme

7. WGB reviewed the 2011 verification related work programme and noted that no amendments were required at this time.

Draft Verification Related Programme and Budget for 2012

8. At the joint meeting of Working Groups A and B on 5 September 2011, the PTS gave a presentation on its adjustments to the initial draft Programme and Budget for 2012 contained in CTBT/PTS/INF.1123. The adjustments are summarized in CTBT/PTS/INF.1142. WGB expressed its appreciation for the presentation. The critical importance of a timely decision on a funding mechanism for the OSI Integrated Field Exercise (IFE) in 2014 was emphasized. WGB requested WGA to consider this issue with a view to a possible decision by the Commission in October 2011.

On-Site Inspection

Implementation of 2011 Programme of Work and Activities Planned for 2012 and Beyond

9. Based on a PTS presentation, WGB reviewed execution of the OSI Major Programme in 2011, which included activities related to both implementation of the adjusted OSI action plan and planning and preparation for the IFE in 2014. It noted that all these activities were implemented as planned and welcomed the progress achieved so far in 2011. The PTS will present the results of further execution of the OSI Major Programme for 2011 to WGB at its Thirty-Eighth Session.

10. WGB requested that the PTS provide detailed information on the Equipment Storage and Maintenance Facility (ESMF) in the form of an Information Paper to be considered at the Thirty-Eighth Session of WGB. This paper is expected to cover, inter alia, ESMF capabilities, a concept for its use, cost and personnel requirements, as well as the possibility of sharing its capabilities and cost with the IMS and IDC Major Programmes. Furthermore, WGB asked the PTS to provide at the same session a status report on the implementation of the adjusted OSI action plan with a view to completion of this implementation.

11. WGB also considered plans for future OSI activities within the draft OSI Major Programme for 2012 presented in CTBT/PTS/INF.1123. It agreed with these plans and reconfirmed that further development of the OSI component of the verification regime remained a high priority for 2012 and beyond. In this context WGB began to discuss possible elements of its guidance for the development of the OSI Major Programme for 2013. This guidance will be finalized at the next session of WGB.

Draft OSI Operational Manual

12. WGB continued its third round of elaboration of the draft OSI Operational Manual according to the agreed framework set out in CTBT/WGB/TL-18/37. Consultations were conducted on the following issue papers:

- ECS/DIS/WGB/TL-18/IP_1_InspectionPreparations
- ECS/DIS/WGB/TL-18/IP_3_BaseOfOperations
- ECS/DIS/WGB/TL-18/IP_4_Observation&Imaging/Rev3
- ECS/DIS/WGB/TL-18/IP_5_InspectionEquipment/Rev4

- ECS/DIS/WGB/TL-18/IP_6_ITSupport
- ECS/DIS/WGB/TL-18/IP_7_SeismicTechniques/Rev3
- ECS/DIS/WGB/TL-18/IP_8_Radionuclides/Rev2
- ECS/DIS/WGB/TL-18/IP_9_Confidentiality&MA/Rev1
- ECS/DIS/WGB/TL-18/IP_14_AdHocIssues/Rev2

Consultations on these issues will continue as appropriate at subsequent sessions of WGB and on the Experts Communication System (ECS).

13. WGB welcomed intensification of its work on the draft OSI Operational Manual during this session and progress to resolve a number of issues in the Model Text. WGB noted assessments by the Task Leader for the draft OSI Operational Manual that known issues have now been addressed in relation to text on issues 4(c) (on ground based visual observation), 5(a) and 5(b) (on certain issues related to equipment checking), 5(h) (on seals), 9(b) (on managed access), 14(b) (on inspection planning) and 14(h) (on certain ad hoc issues). WGB recalled nevertheless that a number of significant issues in relation to a draft OSI Operational Manual remain unresolved and that further issues could be raised in relation to any aspect of the draft OSI Operational Manual, including to ensure internal consistency of its provisions. Discussions on CTBT/WGB-32/NAT.2 were concluded at this session of WGB.

14. Overall progress during the third round of elaboration was discussed by WGB based on the list of priority issues included in Annex B to CTBT/WGB/TL-18/42/Rev.4. Areas of progress were identified, as were aspects of the Model Text that may require further review. WGB noted that draft manual text on multispectral and infrared imagery techniques, as well as on active seismometry, is in preparation based on PTS work on application of these techniques for OSI. WGB again expressed its appreciation for the strong practical support the PTS continues to give to the elaboration of the draft OSI Operational Manual, both during WGB meetings and intersessionally.

15. WGB noted PTS comments that preparations for the planned 2014 IFE will require the timely availability of a draft OSI Operational Manual suitable for testing through the exercise. WGB will discuss at its Thirty-Eighth Session how the issues it works on over the coming period can best assist that aim.

16. Annex A of CTBT/WGB/TL-18/42/Rev.5 provides details of issue papers that the Task Leader plans to be discussed by WGB at its Thirty-Eighth Session.

17. Engagement in ECS discussions on the Model Text continues to be limited to experts from only a small number of States Signatories. WGB again encouraged experts from all States Signatories to use the ECS to bring forward their views on issue papers that are under discussion.

Planning and Preparation for the IFE in 2014 and Its Evaluation

18. WGB reviewed the planning and preparation for the IFE in 2014 and the preceding build-up exercises. The PTS presented information on its actions taken already in this

regard. These include first steps on setting up the project management system, establishment of an expert advisory mechanism, as well as initiation of identification of the host State and equipment that could be provided as a contribution in kind. The PTS also reported on relevant activities planned for 2012, including the conduct of two build-up exercises. WGB took note of the information provided. The PTS was asked to provide in future more details on its preparation for the IFE in 2014, to correspond with the projected implementation of a suitable funding mechanism for the IFE in 2014 to be established, and include those details related to the expert advisory mechanism.

19. Considering the PTS request to States Signatories to provide appropriate equipment as long term contributions in kind, as contained in its note verbale dated 11 August 2011, WGB encouraged States Signatories to respond to this request, including by way of indicating their intent, at the earliest possible date. WGB requested the PTS to extend the date for response to mid-October and encouraged the PTS to consider offers from States Signatories received after the date.

20. With respect to the PTS request to States Signatories to host the IFE in 2014, WGB encouraged States Signatories to respond to this request at the earliest possible date.

21. An approach to the comprehensive evaluation of the IFE, as contained in CTBT/PTS/INF.1146, including evaluation of its planning, preparation and conduct, as well as analysis of lessons learned, was presented and discussed. A number of important aspects were addressed in this discussion, including the need to establish an adequate composition of the evaluation team and identify the appropriate experts to serve as evaluators. WGB took note of the suggested approach and encouraged the PTS to proceed further with its development, improvement and implementation, taking into account comments made.

22. WGB will continue to review planning and preparations for the IFE, including corresponding preceding activities, as well as their comprehensive evaluation framework and evaluation products available, at its next session.

OSI Strategic Issues

23. WGB continued its work on the development of metrics for OSI readiness and the establishment of key performance indicators (KPIs) for OSI. The PTS presented a revised set of OSI KPIs, as well as the associated development framework and related baselines and milestones as described in CTBT/PTS/INF.1140. WGB took note of this development and encouraged the PTS to continue with development of KPIs. A revised suggestion on the approach to development of metrics for OSI readiness (CTBT/WGB/TL-4/39/Rev.1) was introduced and discussed. WGB accepted, in general, the suggested approach and direction for further development of the metrics. WGB could undertake a more detailed definition of the initial level of readiness to be achieved by entry into force and a comparison with information provided by the PTS on the current level of development for OSI elements. Subsequently, a corresponding refinement of KPIs should be made. WGB will further address these issues at its next session.

Results and Recommendations of OSI Workshop-19 and Planning for Future OSI Workshops

24. WGB reviewed the outcome from OSI Workshop-19 ("Development of OSI Equipment List: Initial Period Techniques") presented by the PTS and contained in the report of this workshop (CTBT/WS/OSI-19/1). It noted with satisfaction the advancement achieved by the workshop in the development of the list of OSI equipment for the initial period techniques, their specifications, and the concepts for use of this equipment. It concluded that the definition for certain types of this equipment is appropriate for consideration, subject to fine-tuning where necessary, for inclusion into the draft list of equipment for use during OSIs to be approved by the initial session of the Conference of the States Parties. This includes equipment for video and still photography as well as the Seismic Aftershock Monitoring System (SAMS). Significant advances have also been achieved in defining other types of equipment, but further efforts are required. WGB noted the main recommendations of the workshop, which are expected to be taken into account in the course of further definition of OSI equipment and concepts for its use.

25. WGB considered also initial plans for future OSI technical workshops presented by the PTS. The refined plans for subsequent OSI workshops will be reviewed at the Thirty-Eighth Session of WGB.

Development of Draft List of Equipment for Use During On-Site Inspections

26. WGB continued its work on the development of the draft list of equipment to be approved by the initial session of the Conference of the States Parties for use during OSIs, taking into account relevant outcomes from OSI Workshop-19. Given the advanced level of the definition of the list of equipment for video and still photography developed by OSI Workshop-19, WGB agreed to transmit the list to the Commission as follows:

    (1) <u>WGB transmits to the Preparatory Commission the list of equipment for video and still photography, as contained in Appendix I, with a view to a decision being taken by the Commission on its inclusion in the draft list of equipment for use during OSIs to be approved by the initial session of the Conference of the States Parties.</u>

27. Possible ways for achieving further progress in the development of the draft list of equipment for use during OSIs, including possible use of workshops and relevant expert groups, were discussed. WGB will continue to develop the draft list of equipment for use during OSIs at its next session.

Further Development of OSI Equipment and Techniques

28. Based on a PTS presentation, WGB reviewed the status of development, testing and availability of OSI equipment and techniques, such as SAMS and equipment for gamma radiation measurements and radionuclide detection, including radioactive noble gases (RNGs). WGB noted progress had been achieved in the development of SAMS. This system is already in a mature state with a good level of definition of the concept for its

use. WGB took note of the PTS plans for further development and testing of equipment for gamma radiation measurements and radionuclide detection, including RNGs. It reconfirmed that the development and testing of this equipment should be considered as a high priority task. The PTS was encouraged to continue with reporting on advances achieved in the implementation of this task. In particular, WGB requested the PTS to present the results of testing equipment for augering[1], scheduled for 2011, at its Thirty-Eighth Session.

29. The PTS presented a report on the expert meeting devoted to the development of multispectral and infrared imagery techniques (MSEM-11) and its results and recommendations as described in CTBT/PTS/INF.1133. WGB noted with satisfaction these useful results and their further development by OSI Workshop-19. It endorsed the continuation of the development of multispectral and infrared imagery techniques taking into account recommendations made by MSEM-11. The PTS was encouraged to report on its follow-up activities related to these techniques at the next session of WGB.

Development of the Integrated Information Management System

30. WGB reviewed and discussed the results of the tabletop test of the OSI Integrated Information Management System (IIMS) reflected in CTBT/PTS/INF.1136 and supported by the PTS presentation. It noted the importance of these results, which provided a basis for further development, testing and use of the IIMS. WGB encouraged the PTS to continue with this development, taking into account comments and suggestions made in the discussion. In particular, provisions for data security as well as system reliability and robustness should be addressed. Given the anticipated use of the IIMS in the IFE in 2014, WGB recommended to the PTS that it organize, close to the conduct of the IFE in 2014, appropriate familiarization/refresher training on the IIMS for the surrogate inspection team and the inspected State Party team.

OSI Training

31. The PTS presented a status report on implementation of the second training cycle for surrogate inspectors. It reported also on other training related activities such as development of e-learning and e-training capabilities and the current status of the database of trainees (OSIRIS). WGB noted the successful conduct of the advanced training course for a group of 53 trainees from 42 States Signatories and the PTS, with positive feedback from participants, and commended the PTS for its efforts. It recommended the continuation of the further implementation of the second training cycle as a PTS-wide effort providing for expansion of a trained cadre for participation in OSI activities, in particular the IFE in 2014. Taking into account the significant time gap between the planned completion of the main second training cycle activities in 2012 and the conduct of the IFE in 2014, WGB recommended to the PTS that it consider the possible addition of appropriate refresher training elements to be conducted in 2013 and/or in 2014. WGB noted that lessons learned from the implementation of the second training cycle should be taken into account while developing further the long range training plan. WGB will continue to review further implementation of the new training cycle and development of the long range training plan at its subsequent sessions.

[1] An auger is a tool for boring holes in soil, in this case for the purposes of subsoil gas sampling for noble gas detection techniques.

Initiation of the Development of a Framework for Operational Scenarios for Deployment of an Inspection Team

32. Consistent with the work plan for 2011 as described in CTBT/PC-35/WGB/1, WGB began the development of a framework for operational scenarios for deployment of an inspection team by geographical areas and climatic conditions in the case of an OSI within the territory of a State Party. It recognized the importance of the availability of these scenarios for effective planning and conduct of an OSI. Work will be continued at subsequent sessions of WGB with a view to developing a draft framework in the form of a Task Leader Paper and later involvement of the PTS for the development of scenarios. Discussion on this issue will be opened on the ECS.

Development of OSI Agreements and Arrangements

33. WGB continued its work on providing technical input to the development of OSI agreements and arrangements, based on suggestions on this issue presented jointly by the Task Leader for OSI and the Task Leader for the draft OSI Operational Manual (CTBT/WGB/TL-4,18/1 and CTBT/WGB/TL-4,18/2). Following the recommendation of WGA adopted by the Preparatory Commission (CTBT/PC-36/WGA/1), WGB renewed its work on the model special service agreement for OSI inspectors and inspection assistants, as contained in Annex I to CTBT/PTS/INF.1036. It concluded that, at this stage of work, this model agreement contains no unresolved issues of a technical nature on which input from WGB might be required. However, WGB found a need to address the suggested responsibility of a nominating State Party "[t]o make available the on-site [inspector][inspection assistant] at 24 hours notice for a mission" in the draft model exchange of letters with nominating States Parties, as contained in Annex II to CTBT/PTS/INF.1036. WGB will discuss this issue at its next session, taking into account earlier suggestions on its possible solution made through the ECS. Meanwhile, the ECS discussion on this issue will be reopened.

Guidance for Possible Familiarization of States Signatories/Parties with OSI Equipment

34. WGB continued to discuss possible approaches to making provision for familiarization of States Signatories/Parties with OSI equipment and corresponding procedures for its use, including through the use of the ESMF, with a view to developing guidance on this issue. It noted the need to establish appropriate approaches for both pre-entry-into-force and post-entry-into-force periods and the usefulness of development of a Task Leader Paper to support further development. WGB will continue to consider this issue at its future sessions.

Development of the Concept for the Conduct of an OSI on the High Seas

35. WGB considered an approach to the definition of the main conceptual elements for the conduct of an OSI on the high seas (for an underwater event), including application of corresponding OSI techniques as well as operational logistical aspects, proposed by the Task Leader in CTBT/WGB/TL-4/41. It noted that this document constitutes a good basis for further work on the concept. WGB will continue to develop the concept for the conduct of an OSI on the high seas at its subsequent sessions.

Cooperation with States Signatories

36. WGB expressed its appreciation to the Governments of Austria, Hungary and Italy for hosting and supporting various OSI activities in 2011, the European Union for providing financial support to some of these activities within its Joint Action Project IV and all those States that contributed to OSI Workshop-19. WGB encourages States Signatories to extend further their support and cooperation with the PTS and continue with the provision of expertise required to advance OSI capabilities towards operational readiness. WGB encourages also the PTS to be proactive in seeking, receiving and utilizing effectively this support.

Technology Refreshment

37. The PTS briefed WGB on the status of the development and utilization of the vDEC (virtual Data Exploitation Centre). The vDEC provides a computational environment for a structured partnership between researchers external to the PTS to test algorithms on a development version of the data processing pipeline and to have access to the IMS data. Access to the vDEC is automatic for National Data Centres (NDCs) and is granted as needed to others. To gain access, non-NDC researchers submit a short proposal and conclude a zero-cost agreement with the PTS. So far four universities have concluded agreements, as have several contractors and consultants. WGB took note of the development of the vDEC. The PTS should report on the status of vDEC development from time to time as appropriate.

38. WGB reviewed the PTS presentation on the plan to re-engineer the IDC waveform processing software given during the informal briefings prior to the session and in CTBT/PTS/INF.1116. WGB noted that the key technical details of the proposed development effort are being discussed in the waveform expert group (WEG). Furthermore, WGB reaffirmed the need (see CTBT/PC-36/WGB/1, paragraph 41) for a suitable budget carry-forward mechanism to facilitate the planning of the re-engineering project and the work of contractors.

39. WGB discussed the preliminary outcomes of the CTBT: Science and Technology 2011 Conference (S&T2011) using the process for incorporating new and innovative scientific methods into the CTBT verification system outlined in CTBT/WGB/TL-21/12. WGB took note of this paper. As an example of a new scientific method being considered for incorporation into the IDC processing, WGB reviewed a presentation by Stuart Russell of the University of California, Berkeley, on the NET-VISA (Network Processing by Vertically Integrated Seismic Analysis) algorithm that is currently under development and being tested on the vDEC. The NET-VISA approach was developed following the 2009 International Scientific Studies Conference (ISS09) and developed further in S&T2011. It has the potential to significantly reduce the number of missed events at low seismic magnitude and increase the efficiency of the seismic analysts. As appropriate, advances in NET-VISA and other innovative new methods will be brought to WGB for review.

40. WGB reviewed the results of the radionuclide expert group (RNEG). The RNEG discussed four primary topics: (1) response of the radionuclide network to the

Fukushima nuclear accident, (2) IDC processing issues, (3) noble gas issues and (4) laboratory issues. WGB took note of the RNEG conclusion that during events such as the Fukushima nuclear accident radionuclide particulate filters may be classified as radioactive material as defined in the regulations of the State hosting the station and could represent a hazard to the station operator. In consultation with station operators, the PTS should study the impact on station operations of local procedures for radioactive material handling in such cases and report to WGB. WGB took note of the RNEG conclusion that a near real time detection capability for high levels of radioactivity at individual radionuclide stations would be useful for rapid detection and for operator safety. The PTS should study the feasibility of deploying a near real time detection capability or altering procedures to provide near real time information with the current equipment. WGB took note of the RNEG conclusion that the experience of the Fukushima nuclear accident indicated potential issues with the current procedures in the operational manuals for radionuclide laboratories and for radionuclide filter categorization. The RNEG should consider these issues and others within its mandate at its next meeting.

41. WGB reviewed the results of the WEG. The WEG discussed four primary topics: (1) IDC waveform software re-engineering, (2) data availability, (3) IDC processing and (4) IMS seismic station calibration. WGB took note of the efforts of the WEG to continue to elaborate the definition of data availability. WGB noted that the definition of data availability should be based on data that contain useful information and be calculated using the minimum number of channels required to achieve mission capability. WGB noted that the issue of authentication in data availability calculations applies to all IMS technologies and will be discussed by WGB at its Thirty-Eighth session.

42. The RNEG and the WEG met jointly to consider data fusion issues as requested by WGB. WGB took note of the draft of an informal paper on data fusion concepts produced by the joint group. The combined RNEG–WEG should continue to explore data fusion concepts, including the possibility of developing IDC-hosted software tools that allow the possible correlation of radionuclide detections and events in waveform bulletins based on existing capability, i.e. WEB-GRAPE, and the development of data fusion exercises such as those undertaken by NDCs and the IDC. The combined RNEG–WEG should consider these issues at the Thirty-Eighth Session of WGB.

43. WGB reviewed a presentation by Dmitry Storchak of the International Seismological Centre (ISC) on the PTS link to the ISC database. The ISC has been collecting worldwide seismological data from most of the world’s seismic networks since the 1960s. The link allows NDCs and authorized users to examine the Reviewed Event Bulletin (REB) in terms of a broader seismological and historical perspective and to work with other data, as well as a ground truth database and an international registry of seismological stations. WGB took note of this link and encourages its use by NDCs and authorized users.

Performance Assessment

Data Availability Statistics and Activities to Improve Data Availability

44. WGB reviewed the PTS report given during the informal briefings prior to the session on the 'mission capable' data availability in the first half of 2011 and the set of best practices that the PTS has applied to improve the associated KPIs. Further supporting material had also been posted on the ECS prior to these presentations to provide local and remote participants with detailed numerical information. Compared to 2010, the average data availability has been improved substantially to 95.15% (+3.3%) for primary seismic, 88.40% (+1.3%) for hydroacoustic, 93.01% (+2.0%) for infrasound, 88.13% (+3.6%) for radionuclide and 85.97% (+3.7%) for auxiliary seismic stations.

45. The PTS briefed WGB on the results of failure analysis of IMS stations based on six months' statistics. This analysis indicates that the main causes of station downtime relate to mains power externally supplied to the stations and station equipment failures. Failure of the station equipment, in turn, is mainly caused or otherwise induced by power and grounding problems and environmental conditions. Additionally, the PTS informed WGB that the recovery process and therefore station downtime are strongly affected by shipping delays due to customs difficulties and available mechanisms of support for auxiliary seismic stations.

46. Regarding radionuclide particulate stations, while the roll-out of a new generation of cooling systems is under way and showing good results, the main cause of downtime remains failures of the old generation cooling systems that have not yet been replaced. The next most significant cause is administrative delays.

47. In continuing attempts to reduce station downtime, most of the effort should be directed to finding solutions to reduce shipping delays, improving the support provided to the auxiliary seismic stations, given the large number of such stations, and continuing improvement of design and infrastructure of IMS stations.

48. WGB noted that there are still 16 stations which continue to have zero data availability for periods between three and six months or even longer. Many of these stations are not providing data for reasons out of the control of the PTS. WGB noted that this is a reduction from 29 such stations in 2010 and further noted efforts across the PTS to improve these values in a lasting and/or sustainable manner in the areas of IMS operations, optimization of post-certification activity contracts, maintenance and logistics support, failure analysis and engineering activities.

Status and Plans for the Evaluation Programme of Work in 2011 and Plans for 2012

49. WGB noted that the PTS Quality Management System (QMS) framework has been developed, consisting of:

- PTS Quality Policy (issued on 25 August 2006)
- PTS process maps (updated in 2011)

- PTS Process Metrics Manual with KPIs (updated in 2011)
- QMS procedures and QMS documentation (updated in 2011)
- Project management in developing the QMS using PRINCE2
- Consolidated glossary of QMS terms (draft on the ECS).

Application of this framework for quality control/quality assurance (QA/QC) of daily PTS operations is supported by the performance monitoring tool (PRTool), which provides a display of KPIs of the processes measured. Feedback on the quality and suitability of these KPIs will be used to improve the QMS framework. As recommended by the 2010 Quality Management Workshop, establishing the hierarchy of KPIs should produce a very few high level KPIs which would enable States Signatories to obtain a snapshot of overall system performance.

50. WGB noted that the QMS framework including PRTool has successfully provided the basis for specific evaluations such as the display of the isotopes related to the nuclear accident at Fukushima.

51. WGB noted the limited staffing level of the Evaluation Section. In 2012, WGB expects the Evaluation Section to focus its quality management and performance monitoring on the validation of the KPIs and the operational version of PRTool. Evaluation activities should be concentrated on the planning for evaluation of the next IFE, including the evaluation of its preceding activities, and topical evaluations of selected areas of IMS data acquisition and IDC products.

Information Security

52. WGB noted that the PTS-wide information security policy framework, based on gap analysis and results from risk assessments, has been drafted and is now undergoing internal reviews and consultations. The development of the PTS security awareness programme has been initiated as well as the development of a security portal for dissemination of information security related issues.

53. Regarding Global Communications Infrastructure (GCI) security, the dialogue with the contractor aiming at operational security improvements is continuing. Tailored security policies governing GCI security management are being implemented.

54. WGB noted that these security improvement measures are requirements for moving from phase 5a to 5b of the IDC Progressive Commissioning Plan.

Public Key Infrastructure

55. WGB reviewed the PTS report on a small scale experiment in data authentication that has been conducted in order to verify the function of the PTS Public Key Infrastructure (PKI). This experiment involved the PKI operators of the participating 16 States Signatories, 23 IMS stations, 13 NDCs and 30 people within the PTS in a limited pre-operational environment. Substantial work is required in 2011 and 2012 in order to overcome the exposed deficiencies in policies, documentation, training, communication and hardware and software compatibility. Establishing the required chain of trust has

been crucial and time consuming, and the success rate of authenticating data requires further improvement. WGB suggested that an action plan along the lines of the seismic station calibration initiative could be useful to accelerate the wider scale testing and deployment of authentication.

Development of the Single Integrated User Portal

56. WGB noted that since its Thirty-Sixth Session, the PTS has completed the migration of multiple services to the latest software suite: the ECS, the IDC secure web site, the Database of the Technical Secretariat (DOTS), the IMS Reporting System, PRTool, the KPI access server, PKI test services, the state of health (SOH) system and the new message system. All are accessible from *http://accesstest.ctbto.org*. The implementation of user management for external users is under way, providing customization for each user. The design of the system, as well as the design and 'look and feel' of the portal, has been completed, and 53 users are testing the system. Outstanding items are the integration and deployment of all Web applications accessible to authorized users and further personalization of the user portal. Completion of these items is now planned for the second half of 2011.

Communications

Global Communications Infrastructure Commissioning and Maintenance

57. WGB noted that five new links were installed in the first half of 2011: two new very small aperture terminal (VSAT) links in Mali, one new VSAT link in the Cocos Islands (Australia), one virtual private network (VPN) link in Iraq and one VPN link in Australia to support communications from Macquarie Island. One VSAT site was converted to Internet back-up operation. The migration of the PTS-managed VPN links to the GCI II contractor, Ultisat, was nearing completion. Twenty-five VPN links were migrated to the GCI contractor during the first half of 2011. GCI maintenance activities included one VSAT antenna relocation and one VSAT antenna refurbishment.

GCI Statistics

58. WGB noted that in the first half of 2011 the adjusted GCI availability reached the contractual requirement of 99.5% in four of six months. The actual availability ranged between 97.51% and 98.66%. VPN availability ranged between 95.32% and 97.93%. Actual link availability within independent subnetworks (ISNs) varied between 99.21% and 99.92%, reaching 99.5% during four of six months. WGB noted that site power problems and delays in coordination of assistance with points of contact for GCI site maintenance or station operators were major contributors to GCI outage time.

GCI Network Redundancy

59. WGB noted the current GCI core network redundancy. A planned upgrade to this existing core design is to be completed by the end of September 2011. This upgrade will provide greater geographical redundancy, considerably reducing the reliance of the GCI on terrestrial communication infrastructure in the area of the EIK teleport in Norway.

PTS Internet Access

60. WGB noted that the PTS upgraded its two Internet connections from 10 to 50 megabits/second per link.

Network Management System

61. WGB noted the progress to expand monitoring by the GCI network management system of ISN communication links and VPNs and the integration of these systems with the Web based SOH system.

Testing and Provisional Operation

Progress in Transferring IMS Stations into IDC Processing in 2011

62. The PTS reported on the current status regarding the integration of IMS stations into IDC processing. WGB noted that 3 IMS stations (1 primary seismic, 1 auxiliary seismic and 1 radionuclide) were transferred so far during 2011, bringing the overall number of stations promoted to provisional operations to 257 (42 primary seismic, 100 auxiliary seismic, 11 hydroacoustic, 43 infrasound and 61 radionuclide), a total of 80% of the network.

IMS Operation and Maintenance Workshop

63. WGB reviewed a presentation from the United States of America on the preliminary recommendations from the IMS Operation and Maintenance (O&M) Workshop that was held in San Diego, California, from 9 to 13 May 2011. The overall workshop objective was to further develop the O&M processes, procedures and tools necessary to meet the IMS requirements at entry into force of the CTBT. A total of 88 participants from 43 countries as well as PTS staff attended the workshop. WGB noted that the PTS will publish a report containing the final recommendations from the workshop before the end of 2011. WGB will review this report at its Thirty-Eighth Session.

PTS Response to the Recent Events in Japan and Lessons Learned

64. The PTS gave comprehensive reports, including an Information Paper (CTBT/PTS/INF.1151), on the operational experience and lessons learned from the disastrous events in Japan in March 2011. WGB noted that these events, the Tohoku earthquake, the resulting tsunami and the nuclear accident at Fukushima, represented an unprecedented high intensity stress test for the entire verification system. WGB noted that the system played an important role in tsunami warnings and in providing precise data on the global distribution of radionuclide material and noble gases released from the Fukushima power plant. WGB further noted that these events once more emphasized the potential usefulness of the verification system in civilian applications.

65. WGB noted that the Tohoku earthquake, its more than 10 000 aftershocks and the nuclear accident at Fukushima highlighted one of the major challenges for the verification system, which is how to sustainably manage large volumes of data analysis

within fixed and narrow time frames. One of the lessons learned is the continued need for improved science for more efficient ways to deal with earthquake sequences, software to support this effort and procedures to allow a flexible response to changing volumes of work.

66. WGB noted that, owing to the resilience and good performance of the verification system in combination with dedicated work of the PTS, the stress test was well managed and data are available, including through the vDEC. WGB commended the PTS for its dedicated work in the aftermath of these events in Japan.

Cooperation in Atmospheric Transport Modelling

67. WGB reviewed the status of cooperation with the World Meteorological Organization (WMO). WGB noted that this cooperation continues to be carried out in full conformity with the agreement between the Commission and the WMO and provides important benefits to both parties. Nine Regional Specialized Meteorological Centres (RSMCs) of the WMO currently participate in the joint CTBTO–WMO global response system in atmospheric backtracking which has been in provisional operation since 1 September 2008. Under this agreement, the PTS can request atmospheric transport modelling (ATM) for radionuclide particulate detections in the IMS network that have been classified as abnormal (Level 5). In the immediate aftermath of the Fukushima nuclear accident (March–April 2011) 13 such requests were issued for 245 samples. Afterwards, the number of PTS requests for ATM calculations was reduced in order not to overburden the RSMCs. WGB noted with satisfaction that the response system had successfully met the challenges associated with the Fukushima accident. WGB noted the limited staffing levels of ATM officers and that there is a need for sufficient ATM staff, as outlined in CTBT/PTS/INF.1151.

International Noble Gas Experiment

68. WGB reviewed the PTS presentation on the status of the International Noble Gas Experiment (INGE) given during the informal briefings prior to the session. Noble gas system installations and certifications have been delayed this year due to the nuclear accident at Fukushima. WGB noted with satisfaction that two certifications were completed, that four more are planned before the end of 2011 and that the installation of RN13 is nearing completion. WGB noted that in total 28 systems have been installed so far under the auspices of INGE (27 at IMS locations and 1 at CAX05 in Canada). In future presentations of data availability, the PTS should present data for all three types of noble gas systems. WGB took note of the concept for a laboratory based noble gas QA/QC programme contained in CTBT/PTS/INF.1139. The PTS should continue the implementation of the QA/QC programme and report to WGB as appropriate.

69. WGB reviewed the progress of moving certified noble gas systems into provisional operations contained in a PTS presentation given during the informal briefings prior to the session. Noble gas systems are being moved into provisional operations while INGE is continuing in accordance with CTBT/PC-32/WGB/1, paragraph 26. WGB took note of the installation of the new noble gas analysis software and requested the PTS to continue to move noble gas systems into provisional operations as they become certified.

Radionuclide Laboratories

70. WGB discussed a proposal to adjust the radionuclide laboratory fee structure based on standard inflation rates as presented in CTBT/PTS/INF.1117. WGB supported the proposal and further noted that fees will need further future adjustments as appropriate for inflation.

(2) WGB recommends to the Commission that it task the PTS to adjust radionuclide laboratory fees consistent with the PTS proposal in paragraph 7 of CTBT/PTS/INF.1117, and to adjust fees annually by the Commission-assessed inflation rates.

Draft IMS and IDC Operational Manuals

71. The Task Leader for the draft IMS and IDC Operational Manuals introduced the near final draft version of the IDC Operational Manual (CTBT/WGB/TL-11,17/19/Rev.5), which is now being translated into all official languages of the Commission.

72. The Task Leader Paper on the status of the draft IMS and IDC Operational Manuals was also introduced (CTBT/WGB/TL-11,17/29). It lists major remaining technical issues in the near final draft versions of these manuals. Contributions via the ECS will be used for continuing and finalizing the work on remaining issues in 2012. Pending resolution of these remaining issues, the corresponding text in the draft IMS Operational Manuals should be treated as provisional guidelines for testing, e.g. for handling of radionuclide filter samples.

IDC Progressive Commissioning Plan

73. At the Thirty-Fifth Session of WGB, the PTS provided a draft schedule for progressing through the current phase 5a to phase 5b of the IDC Progressive Commissioning Plan. WGB agreed during that session that three tasks remain before moving out of phase 5a. The tasks are:

- The PTS will complete the development and integration of additional functionality for radionuclide particulate processing and noble gas processing.
- The PTS will develop additional information security measures, including a draft security policy, a report on risk assessment, and development and deployment of a new PKI at the IDC and at an initial set of IMS facilities.
- The PTS will prepare a draft test plan for the IDC validation and acceptance testing and have this plan reviewed by WGB.

74. The PTS gave a presentation on the progress of the three tasks, together with an update on activities within the PTS performance monitoring and testing framework. WGB noted that the PTS plans to complete all three tasks and formally submit the draft test plan before the Thirty-Eighth Session of WGB. WGB further noted that the first task comprises development of new radionuclide software under Linux for both particulate and noble gas systems. This development has already been completed and the software

is now operational. The progress regarding the second task is referred to in paragraphs 52-55. Addressing the third task, WGB noted that a preliminary version of the draft test plan is now under internal PTS review, and will be posted on the ECS by September/October 2011 for comments by States Signatories. A revised draft test plan will then be posted on the ECS in January 2012. WGB appreciated the presentation, and noted that the PTS and States Signatories will continue to work together on the draft test plan. WGB will review the draft test plan at its Thirty-Eighth Session.

IMS Integrated Logistics Support

75. WGB reviewed a PTS presentation on the IMS integrated logistics support (ILS) system, and noted with satisfaction that it continues to be developed, implemented, validated and improved as planned. Recognizing that this discipline is human resources intensive, WGB noted that ILS is a collective venture where each stakeholder (PTS, host countries, station operators and States Signatories) need to acknowledge and exercise their respective responsibilities and roles.

76. With respect to problems associated with customs delays, WGB welcomed measures which have improved shipping time and consequently reduced station downtime. Among these measures are: early involvement of and notification to the host country via donation letters, PTS requests via Permanent Missions to obtain assistance when customs delays are experienced, and an increased level of cooperation between the PTS and the United Nations Development Programme (UNDP) in countries where UNDP offices can assist with customs clearance. Other measures which have been effective in reducing downtime include increasing the level of spare components in individual countries and establishment of regional depots in areas with known customs problems. Regarding the last two initiatives, however, WGB noted that although these measures are successful at improving data availability, they do result in an increase in the overall sustainment costs. In cases where customs taxes are unavoidable, the PTS pays the fees and seeks to claim them back from the host country. WGB urged all host countries to continue working together with their station operators and the PTS to mitigate customs delays and associated costs.

77. Considering the steady progress made on ILS in the past years, WGB requested the PTS to provide an Information Paper at its Thirty-Eighth Session, summarizing the ILS system plan and associated activities. Reporting to WGB would from then on only be needed on special issues that require additional guidance, oversight or other assistance from WGB.

Sustainment of Auxiliary Seismic Stations

78. WGB reviewed a PTS presentation on the progress regarding initiatives towards sustainment of auxiliary seismic stations and noted with satisfaction their initial positive effect on data availability, which reached a high for such stations of 87.85% in April 2011. WGB requested the PTS to continue with its initiatives as presented, looking for practical solutions to sustain certified IMS auxiliary stations in developing countries. Such solutions might include taking advantage of existing parent networks and requesting voluntary contributions. WGB noted that substantial voluntary contributions have already been obtained from the USA and the European Union. All host countries

are encouraged to continue looking for workable and sustainable solutions to ensure the required data availability of their IMS auxiliary seismic stations.

IMS Stations HA3 and IS14

79. WGB reviewed the PTS presentation on the plan to repair hydroacoustic station HA3 and infrasound station IS14 that was given during the informal briefings prior to the session. WGB noted with satisfaction the progress achieved to date and encouraged the PTS to continue the work.

IMS Station HA4

80. WGB reviewed the results of the HA4 Independent Experts Evaluation Panel that concluded its work in October 2010. This station has been offline since February 2006, when the south cable failed. The panel made a series of recommendations to mitigate the hazards of constructing and operating a hydroacoustic station in a difficult southern ocean environment such as the Crozet Islands. The PTS should continue to develop a plan to complete HA4 following the recommendations of the panel and report to WGB at its next session. WGB noted that a substantial contribution was made that would underwrite the reconstruction of the HA4/Crozet Islands station, mitigating any additional financial impact of the reconstruction project for other States Signatories.

IMS Station PS34

81. WGB reviewed CTBT/PTS/INF.1135, which proposes refinements to the coordinates of IMS primary seismic station PS34. The coordinates need to be refined because of a rounding error. The distance between the proposed new coordinates and the previously approved coordinates is 4850 m and is considered a minor change.

(3) WGB transmits to the Preparatory Commission for its possible approval the proposed modifications to Annex 1 of the Protocol which are presented in Appendix II of this report in order for work on the station affected to proceed, recognizing that the proposed changes will be dealt with through legal procedures provided by the Commission (CTBT/PC-9/1/Annex I).

IMS Station IS25

82. WGB further reviewed the proposed move of infrasound station IS25 which was discussed at its Thirty-Sixth Session. There was no consensus on the issue. The PTS was requested to provide more information on the proposed move through an Information Paper by the Thirty-Eighth Session of WGB.

Other Issues Related to Provisional Operation

83. WGB noted with satisfaction that the PTS has continued to maintain continuous delivery of the REB and the Reviewed Radionuclide Report (RRR) during 2011. After the vast increase in workload resulting from the events in Japan in March–April 2011, the IDC was able to bring these products back to the WGB guidelines for timely issuance already by the end of June, as a result of the dedicated PTS work and

temporary consultancy arrangements. WGB notes, however, that critical technical posts should not be filled with consultants or temporary staff as a long term solution.

84. WGB appreciated a PTS demonstration of DOTS together with an introduction to the newly introduced logistics support analysis (LSA) tool. WGB encouraged the PTS to continue its work in this area.

Issues Related to NDCs

85. WGB reviewed a report by the PTS on IDC technical support to States Signatories, which included topics such as capacity building, data access, data forwarding, and services and technical assistance. WGB noted that these services continued to function satisfactorily. WGB noted that the number of secure accounts of States Signatories is now 118 (out of 182 States Signatories as of August 2011). The number of authorized users continues to increase steadily and is now 1235.

86. WGB reviewed a PTS presentation of its current and planned training and capacity building activities, including NDC related training, e-learning programmes, technical visits and station operator training. The purpose of these activities is to provide States Signatories with knowledge and assistance for building and/or improving their NDC capabilities and IMS station operation practices. WGB acknowledged the financial support from the European Union in many of these areas. WGB appreciated these initiatives and requested the PTS to continue to assist in providing hardware and software to developing countries, noting in particular the increased use of data by countries in Africa made possible by PTS capacity building.

87. WGB appreciated the newly proposed course for NDC analysts and the new version of the 'NDC in a box' software, especially the improved version of Geotool. WGB requested the PTS to give a presentation on the status and future plans for the Geotool software at its Thirty-Eighth Session.

88. The German NDC, on behalf of participating NDCs, presented to WGB the status of the ongoing 2010 NDC Preparedness Exercise (NPE10). Results from NPE10 can be found on the NDC discussion forum operated by the Istituto Nazionale di Geofisica e Vulcanologia, Italy (*https://itndc.rm.ingv.it/*). A broad discussion of the exercise will take place at the next NDC evaluation workshop.

89. The PTS presented a preliminary agenda for the forthcoming NDC Evaluation Workshop in Bucharest from 3 to 7 October 2011, organized by the PTS in cooperation with the Government of Romania. The workshop will focus on four areas: review of prior NDC evaluation workshop recommendations, results of NPE10 and plans for future exercises, data fusion concepts, and PTS data, products, services and support provided to NDCs. WGB expressed its appreciation to the Government of Romania for agreeing to host this workshop.

90. The PTS reported on progress in implementation of recommendations from NDC evaluation workshops. Statistics on the current status of the recommendations and the associated actions were presented.

Joint Issues of WGA and WGB

91. A joint meeting of WGA and WGB on 5 September 2011 discussed the 2012 Programme and Budget proposals. A Chairpersons' summary of the proceedings of this joint meeting is to be issued shortly (CTBT/JAB-17/INF.2).

WGB Method of Work

92. As foreshadowed at its Thirty-Sixth Session, WGB reviewed its new method of work to determine whether it should continue to be applied for its sessions in 2012. In this context, WGB recalled that this new method of work (CTBT/PC-36/WGB/1, paragraph 88) contained the following key elements:

- Priority should be given in the schedule to the OSI Major Programme and the draft OSI Operational Manual.
- Extended time slots of 9 a.m. to 12 noon and 1 p.m. to 6 p.m. will be used for formal meetings on the OSI Major Programme and the draft OSI Operational Manual.
- Informal meetings of the radionuclide and waveform expert groups will be coordinated and may be co-scheduled as required with meetings on the OSI Major Programme and the draft OSI Operational Manual.
- Briefing material, including a detailed schedule of formal and informal meetings, will be available sufficiently in advance to enable efficient planning of participation by States Signatories.
- In all formal meetings of WGB, the number of presentations by the PTS will be kept to a minimum to allow more time for discussion among States Signatories. PTS presentations will focus on those issues essential for WGB to be able to carry out its functions of oversight and policy guidance in a results based manner.
- A series of briefings will be continued by the PTS on selected technical issues related to the agenda of the WGB session in the weeks preceding the session, thus helping delegations to be better prepared for the formal WGB discussions. These briefings will be videostreamed on the ECS, and any presentations given as part of these briefings will be available on the ECS.

93. WGB concluded that this new method of work had generally enabled it to carry out its work more efficiently and in a more focused manner at its Thirty-Seventh Session, particularly on issues related to OSI. On this basis, WGB agreed that this method of work, comprising the elements outlined above, should continue to be applied for its sessions in 2012. Moreover, WGB agreed that this method of work should be reviewed again at the end of its Thirty-Ninth Session to determine if it continued to meet the needs of WGB.

94. WGB noted that the informal briefings to be provided by the PTS in advance of each session in 2012 should be tightly focused on the key technical issues on the agenda of WGB. It also requested the PTS to continue its efforts to improve the technical delivery of these informal briefings, including by enabling users of the ECS to download the video files for viewing offline. Moreover, WGB requested that a summarized version of

each presentation delivered as part of the informal briefings in advance of the WGB session be given by the PTS in the relevant formal meeting of WGB with a view to stimulating and facilitating discussions among delegations.

95. WGB agreed that the Task Leaders for OSI and for the draft OSI Operational Manual should continue to manage their meetings with extended time slots in a flexible manner, while taking particular care to allow clearly designated time slots sufficient for informal consultations and breaks as appropriate to facilitate the substantive work.

96. WGB noted again with satisfaction that some PTS presentations given at its Thirty-Seventh Session, as well as background material, were made available in advance on the ECS, and requested the PTS to continue this practice to the maximum extent possible.

WGB Work Programme for 2012

97. WGB undertook an assessment of progress in completion of its work programme for 2011 (contained in paragraph 90 of CTBT/PC-35/WGB/1). It considered that good progress had been made in completion of this work programme overall.

98. Based on this assessment of progress in 2011, WGB considered its work programme for 2012 and agreed on the following.

General

- Review and assess the results achieved in 2011 and 2012 in the progressive development of the verification system, based on progress reports from the PTS and, if necessary, advise the Commission and/or the PTS on measures to be taken and adjustments to be made;
- Provide recommendations to the Commission on guidance to the PTS for preparing the verification related programme and budget for 2013, review the draft Programme and Budget and provide recommendations, as appropriate, to the Commission.

Provisional Operation and Sustainment Issues

- Review guidelines for the technical testing and provisional operation of the IMS, the IDC and the GCI adopted by the Nineteenth Session of the Commission and the application of procedures related to unresolved issues in the draft operational manuals, e.g. handling of radionuclide filter samples;
- Review PTS progress in improving data availability from IMS stations. Based on this review, provide guidance to assist the PTS in efforts to achieve a level of data availability within 2% of post-entry-into-force requirements for all technologies except auxiliary seismic by the end of 2012;
- Review PTS progress in integrating IMS stations (including noble gas systems) into IDC processing. Based on this review, provide guidance to assist the PTS in efforts to have at least 85% of the IMS station network in IDC processing by the end of 2012;

- Review PTS progress regarding initiatives towards sustainment of auxiliary seismic stations. Based on this review, provide guidance to assist the PTS in efforts to achieve data availability for such stations of at least 90% by the end of 2012;
- Assess progress in executing the IDC Progressive Commissioning Plan, including the draft validation and acceptance plan and other elements of the move from phase 5a to 5b;
- Review progress in the PTS development, implementation and validation of the IMS ILS system;
- Assess PTS results from carrying out small scale focused tests and take action as necessary.

Manuals, Procedures and Policies

- Make progress in the framework of the third round of elaboration of the draft OSI Operational Manual, taking into account the needs of planning for OSI field exercises;
- Continue reviewing the draft PTS Process Metrics Manual in the context of development of the overall QMS, aiming at producing a final version of the manual by the end of 2013;
- Review progress regarding information security issues, such as the risk assessment programme, intrusion prevention and detection, and the PKI, aiming at finalizing an information security governing policy by the end of 2013;
- Collect views on, and continue resolving, remaining technical issues in the draft IMS and IDC Operational Manuals.

Radionuclide Issues

- Review progress of INGE;
- Assess progress in xenon background studies and provide initial guidance based on the results of these studies by the end of 2012;
- Review progress in developing software for radionuclide particulate and noble gas analysis;
- Review a draft PTS noble gas quality assurance plan;
- Review a draft PTS noble gas categorization scheme and consider possible changes to the categorization scheme for radionuclide particulate samples;
- Review PTS progress in developing ATM services and products.
- Review PTS progress on studies of the feasibility of additional procedures for operator safety and near real time detection capability at radionuclide stations.

Commissioning of IMS Stations

- Review the status of installation and certification of IMS stations and facilitate technical solutions where possible;
- If necessary, review new requests for reduced assessments;
- As required, consider the need for refinements to IMS station coordinates and/or names/codes.

Production and Delivery of Data and Products

- Review PTS products and associated time lines, adjusting guidance to the PTS as required;
- Continue to review PTS re-engineering of IDC software and make recommendations on priorities for remaining major software developments;
- Review issues related to the long term sustainment of IDC data analysis capability.

Performance Assessment

- Continue review of development of the single integrated user portal;
- Assess PRTool prior to the launching of a production version by the PTS by the end of 2012.

Technology Refreshment

- Review potential implications of PTS development and deployment of next generation radionuclide systems;
- Assess the outcome of S&T2011 with a view to developing possible new agenda items for WGB's task on technology refreshment;
- Review the PTS project on technology foresight and provide guidance as appropriate;
- Review as appropriate the results of the WEG and the RNEG, including those from joint meetings to discuss data fusion, and, as appropriate, consider any recommendations from the groups.

NDCs and Services to States Signatories

- Review the results of NDC preparedness exercises, based on input from States Signatories;
- Review access by NDCs to data, products, software and information in IDC databases, and make recommendations as appropriate based on NDC needs;
- Assess and make recommendations on PTS activities related to training of NDC staff and NDC development and sustainment.

OSI: Overall Strategic Issues

- Provide policy guidance on implementation and adjustment of an action plan for OSI development;
- Develop a more detailed definition of the initial level of readiness to be achieved by entry into force and compare with the current level of development for OSI elements;
- Continue to develop metrics for OSI readiness and OSI KPIs.

OSI Agreements and Arrangements

- Provide technical guidance as required to support development by WGA of OSI agreements and arrangements, including to support resolution by WGA of the issue of the status of OSI inspectors and inspection assistants.

OSI Equipment, Infrastructure and Techniques

- Assist the PTS in obtaining and testing OSI core equipment items, progressively finalizing equipment specifications and operational procedures, and taking into account needs of the IFE in 2014 and preceding build-up exercises;
- Continue to compile an initial draft list of OSI equipment;
- Review the capabilities of the ESMF, as well as capabilities needed for an Operations Support Centre, to ensure their effective use, including for the needs of the IFE in 2014;
- Facilitate and review further development of OSI infrastructure and logistics elements and arrangements to ensure they are fully adequate for maintenance of equipment and provision of support for various OSI activities, including the IFE in 2014;
- Facilitate and review development by the PTS of capabilities for application of OSI techniques and activities in accordance with paragraph 69 of Part II of the Protocol, including their concepts of employment, operational procedures and functional requirements for equipment;
- Review and, as necessary, update the plan for conduct of OSI technical workshops and other expert meetings, including development of OSI techniques not addressed earlier, and review outcomes from these workshops/meetings;
- Continue to develop the list of radionuclides of interest for an OSI.

OSI Methodology

- Continue the development of operational scenarios for deployment of an inspection team in different geographical areas and climatic conditions;
- Continue to develop the main conceptual elements for the conduct of OSI for an underwater event on the high seas, including determining the appropriate application of OSI techniques and logistical aspects.

OSI Training and Testing

- Assess the implementation of the second training cycle for surrogate inspectors;
- Continue to assess testing activities related to the implementation of the OSI action plan.

IFE and Preceding Build-Up Exercises

- Continue to review and provide guidance on planning and preparations for the IFE in 2014 and build-up exercises, to test in an optimal way various OSI elements, concepts and procedures, including their integration;
- Assist the PTS in obtaining equipment and expertise needed for the IFE in 2014 and build-up exercises;
- Review and provide guidance on the evaluation activities for build-up exercises and the IFE in 2014.

(4) WGB recommends to the Commission that it adopt the work programme for WGB for 2012 presented in paragraph 98.

99. WGB noted that it would assess progress in completion of its 2012 work programme at its Thirty-Ninth Session.

Schedule of Sessions for WGB for 2012

100. WGB recalled the agreement reached at its Twenty-Ninth Session on its method of work, in particular that three periods were available to it in a calendar year for the scheduling of its sessions (February/March, May/June and August/September), that the time scheduled within these periods should be flexible from year to year, according to the actual needs as set out in the programme of work, that the number of meetings should be kept to the minimum required to carry out the programme of work and that parallel meetings should be avoided wherever possible (CTBT/PC-29/1/Annex II, paragraph 93).

101. On this basis, and bearing in mind the considerations related to its method of work outlined in paragraphs 92 to 96 above, WGB agreed, subject to the approval of the Commission, on holding its Thirty-Eighth Session from 6 to 24 February 2012 and its Thirty-Ninth Session from 21 August to 7 September 2012, with informal briefings to be held by the PTS in advance of each session. WGB noted that a final decision by the Commission on the timing of the Thirty-Ninth Session of WGB would need to take into account consideration by the Advisory Group at its Thirty-Seventh Session of its schedule of sessions in 2012.

APPENDIX I

LIST OF OSI EQUIPMENT FOR VIDEO AND STILL PHOTOGRAPHY

Description	General Operational Requirements *(including technique defined)*	Specific Operational Requirements	Certification Criteria and Procedures	Technical Specifications	Calibration Requirements
Part 1. Core equipment for inspection activities and techniques *(Items linked to activities and techniques listed in Part II, paragraph 69, of the Protocol)*					
69(b): Handheld compact digital video camera Cleaning kit, accompanying video processing software: manufacturer's set and accessories as appropriate	• For both ground based and aerial inspection activities	• Simple to operate • Operable by inspectors in full protective clothes, ruggedized for most weather conditions, operable in minimum temperature range of –10ºC to +40ºC, relative humidity of 10-90%	*<reference>*	• Screen size: 2 inches or higher • Image stabilization: yes • Memory card type: removable • Storage media with rewrite protection • Optical zoom: minimum range 2×-8× • Digital zoom: minimum 8× • Battery power: provides continuous operation for at least 2 hours • Megapixel: broadcast quality • Type: compact • Internal storage: no (this does not refer to the camera's internal buffer) • Satellite based navigation system: optional • Storage: capable of storing at least 2 hours of video at broadcast quality	n.a.

Description	General Operational Requirements *(including technique defined)*	Specific Operational Requirements	Certification Criteria and Procedures	Technical Specifications	Calibration Requirements
69(b). Handheld digital single lens reflex 35 mm camera for still photography Cleaning kit Flashlight Tripod Carrying case Cable release Satellite based navigation system set Accompanying image processing software: manufacturer's set	• For aerial activities and possible higher resolution still photographic images during ground based inspection activities	• Simple to operate • Operable by inspectors in full protective clothes, ruggedized for most weather conditions, operable in minimum temperature range of –10ºC to +40ºC, relative humidity of 10-90%	<*reference*>	• Effective pixels: >12 megapixels • Sensor size: full frame • ISO: minimum range 100-6400 • Image stabilization: yes • Image format: JPEG, raw or other standard compressed and uncompressed formats • Focus: auto and manual • Viewfinder coverage: range 90-100% • Allow for external flash: yes • Storage type: removable storage media with rewrite protection • Satellite based navigation system: optional • Lens: changeable lenses set in (minimum) range 24-85 mm • Internal image storage: no (this does not refer to the camera's internal buffer) • Ability to disable any communications device built into the camera (e.g. Bluetooth or Wi-Fi)	n.a.

Description	General Operational Requirements *(including technique defined)*	Specific Operational Requirements	Certification Criteria and Procedures	Technical Specifications	Calibration Requirements
69(b). Handheld compact digital camera for still photography Tripod or monopod: yes Release cable: yes Underwater waterproof case: yes Accompanying image processing software: manufacturer's set	For ground based, subsurface or underwater activities	• Simple to operate • Operable by inspectors in full protective clothes, ruggedized for most weather conditions, operable in minimum temperature range of –10ºC to +40ºC, relative humidity of 10-90%	<*reference*>	• Effective pixels: minimum 8 megapixels • Sensor size: range 1/1.5-1/1.7 • ISO: auto, minimum range 80-1600 • Image stabilization: optional • Image format: JPEG, raw or other standard compressed and uncompressed formats • Lens focal length: minimum range 28-140 mm • Digital zoom: yes • Manual focus: yes • Remote control: optional • Built-in flash: optional • Allow for external flash connection: yes • Satellite based navigation system: optional • Voice recording for annotation: optional • Storage type: removable storage media with rewrite protection • Internal image storage: no (this does not refer to the camera's internal buffer) • Battery power: provides continuous operation for at least 2 hours	n.a.

APPENDIX II

Table 1. IMS Stations Requiring Adjustments to Coordinates and/or Names/Codes in Annex 1 to the Protocol to the Treaty
(*Adjustments are shown in bold)*

Station No.	State, Location	Location Code/Name and Coordinates			Proposed New Code/Name or Coordinate(s)			Remarks
		Code	Lat.	Long.	Code/Name	Lat.	Long.	
PS34	Russian Federation, Norilsk		69.3N	87.5E		69.3N	**87.6E**	The purpose of the change, involving a minor coordinate adjustment, is to correct a potential rounding error. The station was certified in December 2010. The actual coordinates are 69.3396N, 87.5550E. Rounding to the first decimal place leads to the new longitude value. The distance between the new and the previously approved coordinates is around 4850 m

ANNEX I

TASK LEADERS

Mr Norbert Opiyo Akech	Task Leader Department of Geology University of Nairobi P.O. Box 30197 Nairobi, Kenya	 Tel.: +254 722 768 535 *opiyo-akech@uonbi.ac.ke*
Mr Luiz Conti	Adviser National Nuclear Energy Commission Research and Development Directorate General Severiano 90 Rio de Janeiro, Brazil	 Tel.: +55 21 2173 2090 *lfcconti@ird.gov.br*
Mr Malcolm Coxhead	Director CTBT Section Australian Safeguards and Non-Proliferation Office RG Casey Building Barton ACT, Australia	 Tel.: +612 6261 1913 Fax: +612 6261 1908 *malcolm.coxhead@dfat.gov.au*
Mr Hans Frese	Adviser DESY (Deutsches Elektronen-Synchrotron) Department IT Notkestrasse 85 22603 Hamburg, Germany	 Tel.: +49 40 8998 2588 Fax: +49 40 8994 2588 *hans.frese@desy.de*
Mr Bernard Massinon	Scientific Adviser Commissariat à l'énergie atomique Direction des applications militaires B.P. 12 91680 Bruyères-le-Châtel, France	 Tel.: +33 1 69265378/4880 Fax: +33 1 69267023 *bernard.massinon@cea.fr*
Mr Öcal Necmioğlu	Geophysicist Kandilli Observatory and Earthquake Research Institute Belbaşi Turkish National Data Center 34684 Çengelköy Istanbul, Turkey	 Tel.: +90 216 516 32 60 Fax: +90 216 332 26 81 *ocal.necmioglu@boun.edu.tr*

Ms Victoria Oancea	Senior Scientist Science Applications International Corporation 8301 Greensboro Drive M/S E 5-6 McLean VA 22102, USA	 Tel.: +1 703 676 4378 Fax: +1 703 676 4285 *victoria.oancea@saic.com*
Mr Gérard Rambolamanana	Head of Institute Observatory of Geophysics of Antananarivo University of Antananarivo P.O. Box 3843 Antananarivo 101 Madagascar	 Tel.: +261 3401 62353 Fax: +261 2022 30182 *rambolamanana_gerard@ yahoo.fr*
Mr Frode Ringdal	Scientific Director NORSAR P.O. Box 53 2027 Kjeller, Norway	 Tel.: +47 63 805931 Fax: +47 63 818719 *frode@norsar.no*
Mr Vitaly N. Shchukin	Head of Laboratory Russian Federal Nuclear Center (RFNC-VNIITF) P.O. Box 245 Snezhinsk Chelyabinsk Region 4556770 Russian Federation	 Tel.: +7 351 46 54730 Fax: +7 351 46 55118 Tel. (private): +7 351 46 35594 *v.n.shchukin@vniitf.ru*
Mr Jay Zucca	Program Director Lawrence Livermore National Laboratory P.O. Box 808 Livermore CA 94551, USA	 Tel.: +1 925 422 4895 Fax: +1 925 422 3464 *zucca2@llnl.gov*

CHAIRPERSON

Mr Hein Haak
Director
Climate and Seismology Department
Royal Netherlands
Meteorological Institute
Wilhelminalaan 10
P.O. Box 201
3730 AE De Bilt, Netherlands
Tel.: +31 30 2206341
Fax: +31 30 2201364
haak@knmi.nl

FRIENDS OF THE CHAIR

Mr Svein Mykkeltveit
NORSAR
P.O. Box 53
2027 Kjeller, Norway
Tel.: +47 63 805942
Fax: +47 63 818719
svein@norsar.no

Mr David A. McCormack
Natural Resources Canada
Ottawa, Canada
Tel.: +1 613 992 8766
Fax: +1 613 992 8836
david.mccormack@nrcan.gc.ca

SECRETARY

Mr Arne Bell
Provisional Technical Secretariat
CTBTO Preparatory Commission
Vienna International Centre
P.O. Box 1200
1400 Vienna, Austria
Tel.: +43 1 26030 6396
Fax: +43 1 26030 5953
arne.bell@ctbto.org